

**Volume 24 (2002)****Volume 24 Number 1 January 2002****SPECIAL ISSUE**

Non-linear Processing of Biomedical Signals

Guest Editor

S. Cerutti

iii **Guest editorial***S. Cerutti***Papers**

1 Time-varying statistical dimension analysis with application to newborn scalp EEG seizure signals
P. Celka and P. Colditz

9 A discrete-time nonlinear Wiener model for the relaxation of soft biological tissues
V. Quaglini, F. Previdi, R. Contro and S. Bittanti

21 Short and long term non-linear analysis of RR variability series
G. Baselli, S. Cerutti, A. Porta and M.G. Signorini

33 Mutual information and phase dependencies: measures of reduced nonlinear cardiorespiratory interactions after myocardial infarction
D. Hoyer, U. Leder, H. Hoyer, B. Pompe, M. Sommer and U. Zwiener

45 Does synchronization reflect a true interaction in the cardiorespiratory system?
E. Toledo, S. Akselrod, I. Pinhas and D. Aravot

53 Recurrence quantification analysis as a tool for nonlinear exploration of nonstationary cardiac signals
J.P. Zbilut, N. Thomasson and C.L. Webber

61 Spontaneous and forced non-linear oscillations in heart period: role of the sino-atrial node
F. Censi, G. Calcagnini, P. Bartolini, C. Bruni and S. Cerutti

71 Fractal dimensions of laser doppler flowmetry time series
G. Carolan-Rees, A.C. Tweddle, K.K. Naka and T.M. Griffith

77 Improved estimators for fractional Brownian motion via the expectation-maximization algorithm
R. Fischer and M. Akay

Volume 24 Number 2 March 2002**Papers**

85 Inadequate placement of osteochondral plugs may induce abnormal stress-strain distributions in articular cartilage - finite element simulations
J.Z. Wu, W. Herzog and E.M. Hasler

99 Importance of the superficial tissue layer for the indentation stiffness of articular cartilage
R.K. Korhonen, M. Wong, J. Arokoski, R. Lindgren, H.J. Helminen, E.B. Hunziker and J.S. Juvvelin

109 The influence of design parameters on cortical strain distribution of a cementless titanium femoral stem
R.M. Gillies, P.H. Morberg, W.J.M. Bruce, A. Turnbull and W.R. Walsh

115 Motion quality evaluation of upper limb target-reaching movements
N. Yang, M. Zhang, C. Huang and D. Jin

121 A dynamic model for simulating a trip and fall during gait
X. Zhou, L.F. Draganich and F. Amirouche

Communication

129 Lacunarity analysis of spatial pattern in CT images of vertebral trabecular bone for assessing osteoporosis
G. Dougherty and G.M. Henebry

Technical notes

139 Assessment of the ultrasonic dental scaler insert
S.C. Treter, A.D. Walnsley, G. Landini and J.M. Shippen

145 Assessment of a three-dimensional robotic model for biomechanical-data acquisition of human movement
P. Desjardins, A. Plamondon and M. Gagnon

151 A numerical method for estimating blood flow by dynamic functional imaging
T.S. Koh and Z. Hou

159 An investigation of the repeatability and reproducibility of ISO 11948-1 (the Rothwell method) for measuring the absorption capacity of incontinence pads
A.M. Cottenden, J.G. Rothwell, H. Leander, C. Grau and R.J. Brooks

Volume 24 Number 3 April 2002

Papers

165 The regional difference of viscoelastic property of bovine temporomandibular joint disc in compressive stress-relaxation
R. del Pozo, E. Tanaka, M. Tanaka, M. Okazaki and K. Tanne

173 Development and evaluation of a novel decellularized vascular xenograft
B.S. Conklin, E.R. Richter, K.L. Kreutziger, D.-S. Zhong and C. Chen

185 An effective coding technique for the compression of one-dimensional signals using wavelet transforms
M. Abo-Zahhad and B.A. Rajoub

201 A wavelet packets decomposition algorithm for quantification of in vivo ¹H-MRS parameters
L.T. Mainardi, D. Origgi, P. Lucia, G. Scotti and S. Cerutti

Communication

209 A new orthotic device in the non-operative treatment of idiopathic scoliosis
A.G. Veldhuizen, J. Cheung, G.J. Bulthuis and G. Nijenbanning

Technical notes

219 Three-dimensional analysis and visualization of regional MR signal intensity distribution of articular cartilage
J. Hohe, S. Faber, R. Muehlbauer, M. Reiser, K.-H. Englmeier and F. Eckstein

229 Accuracy estimations of testing of infusion devices using weighing balances
D.M. Clarkson

237 A versatile drop foot stimulator for research applications
D.T. O'Keeffe and G.M. Lyons

Letter to the Editor

243 Influence of head constraint and muscle forces on the strain distribution within the intact femur
J.P. Paul

Volume 24 Number 4 May 2002**Papers**

245 Improving the detection of evoked responses to periodic stimulation by using multiple coherence—application to EEG during photic stimulation
A.M.F.L. Miranda de Sá and L.B. Felix

253 Simulation of mechanical responses of fingertip to dynamic loading
J.Z. Wu, R.G. Dong, S. Rakheja and A.W. Schopper

265 Numerical study on three-region thawing problem during cryosurgical re-warming
Y.-T. Zhang and J. Liu

Communications

279 Arterial compliance is a main variable determining the effectiveness of intra-aortic balloon counterpulsation: quantitative data from an in vitro study
T.G. Papaioannou, D.S. Mathioulakis, J.N. Nanas, S.G. Tsangaris, S.F. Stamatelopoulos and S.D. Moulopoulos

285 A transmission line model of the human foetal circulatory system
L.J. Myers and W.L. Capper

295 Estimation of out-of-plane vertebra rotations on radiographic projections using CT data: a simulation study
P. Bifulco, M. Sansone, M. Cesarelli, R. Allen and M. Bracale

Technical note

301 Effect of hemolysis on oxygen and hematocrit measurements by near infrared reflectance spectroscopy
F. Neudel, S. Takatani, H. Reul and G. Rau

Volume 24 Number 5 June 2002**Papers**

309 The discrimination of stenosed carotid bifurcation models with smooth and irregular plaque surface.
Part I. Laser and ultrasonic Doppler flow studies
B. Lesniak, K. Kaluzynski, D. Liepsch and T. Palko

319 The discrimination of stenosed carotid bifurcation models with smooth and irregular plaque surface.
Part II. The multivariate statistical analysis of ultrasonic Doppler velocity data
B. Lesniak, K. Kaluzynski, D. Liepsch and T. Palko

325 Measurement of ejection fraction with standard thermodilution catheters
I. dos Santos, A. Ferreira da Rocha, F. Assis de O.Nascimento, J. Souza Neto and J.W. Valvano

337 Optimizing the biomechanical compatibility of orthopedic screws for bone fracture fixation
A. Gefen

349 Automatic recognition of alertness and drowsiness from EEG by an artificial neural network
A. Vuckovic, V. Radivojevic, A.C.N. Chen and D. Popovic

Communications

361 Electret-thermal analysis of blood
L.S. Pinchuk, V.A. Goldade, G.M. Sessler, A.G. Kravtsov, S.V. Zotov and E.A. Tsvetkova

365 The device and algorithm for estimation of the mechanoemission chaos in blood of patients with gastric cancer
V.E. Orel, A.V. Romanov, N.N. Dzyatkovskaya and Y.I. Mel'nik

373 Erratum

Volume 24 Number 6 July 2002**Papers**

385 Application of simulated annealing for estimating BAEPs in endocochlear pathologies
A. Nail-Ali and P. Siarry

393 Numerical investigation of the haemodynamics at a patched arterial bypass anastomosis
J.S. Cole, J.K. Watterson and M.J.G. O'Reilly

403 Comparison of performance of spherical and realistic head models in dipole localization from noisy EEG
B. Vanrumste, G. Van Hoey, R. Van de Walle, M.R.P. D'Havé, I.A. Lemahieu and P.A.J.M. Boon

Technical notes

419 A computer system for acoustic analysis of pathological voices and laryngeal diseases screening
S. Hadjitolov and P. Mitev

431 Arthroscopic assessment of human cartilage stiffness of the femoral condyles and the patella with a new tactile sensor
Y. Uchio, M. Ochi, N. Adachi, K. Kawasaki and J. Iwasa

437 Handling missing marker coordinates in 3D analysis
P. Desjardins, A. Plamondon, S. Nadeau and A. Delisle

441 Evaluation of wheelchair sling seat and sling back crashworthiness
D. Ha, G. Bertocci, P. Karg and E. Deemer

Volume 24 Numbers 7-8 September-October 2002**SPECIAL ISSUE**

Models and Analysis of Vocal Emissions

Guest Editors

C. Manfredi and A. Barney

Guest Editorial

449 Models and analysis of vocal emissions
C. Manfredi and A. Barney

Physical Modelling and Measurement

453 Hybrid parametric-physiological glottal modelling with application to voice quality assessment
C. Drioli and F. Avanzini

461 Stimulated production of vowel-like LX-waveforms and spectral damping in the absence of phonation
C. Moore and S. Jones

467 A method for measurement of the vocal tract impedance at the mouth
M. Kob and C. Neuschafer-Rube

473 A study of the central control of vocalization using the squirrel monkey
U. Jürgens

Communications

479 Quantitative values for perceptual notion of speech speed
R. Wainschenker, J. Doorn and M. Castro

485 Experimental comparison between a Saffieri and a New Prototype tracheo-oesophageal valve
G. Belforte and M. Carello

Analysis Techniques**Tutorial**

493 The real and the non-real in speech measurements
D.M. Howard

501 Developmental aspects of infant's cry melody and formants
K. Wermke, W. Mende, C. Manfredi and P. Bruscaglioni

515 Reconstruction of speech from whispers
R.W. Morris and M.A. Clements

521 Identifying a differential equation for lip motion
J.C. Lucero

529 Non-linear prediction for oesophageal voice analysis
L. Landini, C. Manfredi, V. Positano, M.F. Santarelli and N. Vanello

535 Assessing the sound of cough towards vocality
A. Van Hirtum and D. Berckmans

541 Automated recognition of spontaneous versus voluntary cough
A. Van Hirtum and D. Berckmans

547 Noise reduction for vocal pathologies
L. Matassini and C. Manfredi

Technical notes

553 Quantitative assessment of the use of continuous wavelet transform in the analysis of the fundamental frequency disturbance of the synthetic voice
A. Parraga, M.A. Zaro and A. Schuck Jr

561 Pathological voice quality assessment using artificial neural networks
R.T. Ritchings, M. McGillion and C.J. Moore

Volume 24 Number 9 November 2002

Review

565 Mathematical modelling for the new millennium: medicine by numbers
S.W. Smye and R.H. Clayton

Papers

575 Modelling of flow and wall behaviour in a mildly stenosed tube
K.W. Lee and X.Y. Xu

587 Dynamic model of the role of platelets in the blood coagulation system
C.Q. Xu, Y.J. Zeng and H. Gregersen

595 An advanced computer-aided geometric modeling and fabrication method for human middle ear
Q. Sun, K.-H. Chang, K.J. Dormer, R.K. Dyer Jr. and R.Z. Gan

Communication

607 Does low output laser stimulation enhance the healing of crural ulceration? Some critical remarks
A. Franek, P. Król and M. Kucharzewski

Technical notes

617 Morphological study of the proximal femur: a new method of geometrical assessment using 3-dimensional reverse engineering
B. Mahaisavariya, K. Sittisiripratip, T. Tongdee, E.L.J. Bohez, J. Vander Sloten and P. Oris

623 The sensitivity of posturographic parameters to acquisition settings
M. Schmid, S. Conforto, V. Camomilla, A. Cappozzo and T. D'Alessio

633 Precision test apparatus for evaluating the heating pattern of radiofrequency ablation devices
I. Chang and B. Beard

Volume 24 Number 10 December 2002

Review

641 Design considerations for a wrist implant
D.E.T. Shepherd and A.J. Johnstone

Papers

651 Characterizing reactive hyperemia via tissue reflectance spectroscopy in response to an ischemic load across gender, age, skin pigmentation and diabetes
S. Sprigle, M. Linden and B. Riordan

663 Active insulin infusion using optimal and derivative-weighted control
Z.-H. Lam, K.-S. Hwang, J.-Y. Lee, J.G. Chase and G.C. Wake

673 On-line novelty detection for artefact identification in automatic anaesthesia record keeping
S.W. Hoare, D. Asbridge and P.C.W. Beatty

683 A stereo-photogrammetric method to measure the facial dysmorphology of children in the diagnosis of fetal alcohol syndrome
E.M. Meintjes, T.S. Douglas, F. Martinez, C.L. Vaughan, L.P. Adams, A. Stekhoven and D. Viljoen

Technical notes

691 A reconnectable multiway implantable connector
D.N. Rushton, A.M. Tromans and N. de N. Donaldson

695 Universal application-specific integrated circuit for bioelectric data acquisition
B. Fuchs, S. Vogel and D. Schroeder

703 Comparison of virtual and real electric powered wheelchair driving using a position sensing joystick and an isometric joystick
R.A. Cooper, D.M. Spaeth, D.K. Jones, M.L. Boninger, S.G. Fitzgerald and S. Guo

I Index**Announcement****XV Perkins Prize 2001**

